INDIAN SCHOOL MUSCAT
ANNUAL SYLLABUS PLAN 2019-20
MATHEMATICS
CLASS 11

MONTHS	TOPICS
April 2019	***Sets**.Sets and their representations. Empty set. Finite and Infinite sets. Equal sets. Subsets. Subsets of real numbers especially intervals (with notations). Power set. Universal set. Venn diagrams. Union and Intersection of sets. Difference of sets. Complement of a set. Properties of Complement Sets. ***Sequence and Series**. Arithmetic Progression (A.P.). Arithmetic Mean (A.M.) * Geometric Progression (G.P.), general term of a G.P., sum of n terms of a G.P., Arithmetic and Geometric series infinite G.P. and its sum, *geometric mean (G.M.), relation between A.M. and G.M. *Sum to n terms of the special series $\sum_1^n k$, $\sum_1^n k^2$, $\sum_1^n k^3$.
May 2019	***Sequence and Series(continue…)** *Sum to n terms of the special series $\sum_1^n k$, $\sum_1^n k^2$, $\sum_1^n k^3$. ***Relations & Functions:** Ordered pairs, Cartesian product of sets. Number of elements in the Trigonometric product of two finite sets. Cartesian product of the set of reals with itself (up to R x R x R). Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special kind of relation from one set to another. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum and greatest integer functions, with their graphs. Sum, difference, product and quotients of functions. Concept of exponential and logarithmic function. ***Linear inequalities**. Algebraic solutions of linear inequalities in one variable and their representation on the number line. Graphical solution of linear inequalities in two variables.
July 2019	**Trigonometric Functions:** *Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin^2 x + \cos^2 x = 1$, for all x. Signs of trigonometric functions. Domain and range of Trigonometric functions and their graphs. *Expressing $\sin (x \pm y)$ and $\cos (x \pm y)$ in terms of $\sin x$, $\sin y$, $\cos x$ & $\cos y$. Deducing the identities like the following: *Expressing $\sin (x \pm y)$ and $\cos (x \pm y)$ in terms of $\sin x$, $\sin y$, $\cos x$ & $\cos y$. Deducing the identities like the following: $\tan (x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}$; $\cot (x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x}$ $\sin x + \sin y = 2 \sin\frac{x+y}{2}\cos\frac{x-y}{2}$; $\cos x + \cos y = 2\cos\frac{x+y}{2}\cos\frac{x-y}{2}$ $\sin x - \sin y = 2 \cos\frac{x+y}{2}\sin\frac{x-y}{2}$; $\cos x - \cos y = -2\sin\frac{x+y}{2}\sin\frac{x-y}{2}$

August 2019	**<u>Trigonometric Functions: (Continue…..)</u>** *Identities related to $\sin 2x$, $\cos 2x$, $\tan 2x$, $\sin 3x$, $\cos 3x$ and $\tan 3x$. General solution of trigonometric equations of the type $\sin q = \sin a$, $\cos q = \cos a$ and $\tan q = \tan a$. **<u>Statistics</u>**. Measures of dispersion; mean deviation, variance and standard deviation of ungrouped/grouped data. Analysis of frequency distributions with equal means but different variances.
September 2019	Analysis of frequency distributions with equal means but different variances. Mis.Excercise **<u>Principle of Mathematical Induction:</u>** *Process of the proof by induction, motivating the application of the method by looking at natural numbers as the least inductive subset of real numbers. The principle of mathematical induction and simple applications. **TERM EXAMINATION**
October 2019	**<u>Complex Numbers and Quadratic Equations:</u>** *Need for complex numbers, especially, to be motivated by inability to solve some of the quadratic equations. Algebraic properties of complex numbers. *Argand plane and polar representation of complex numbers. Statement of Fundamental Theorem of Algebra, solution of quadratic equations in the complex number system. Square root of a complex number. **<u>Permutations and Combinations:</u>** *Fundamental principle of counting. Factorial n. ($n!$)Permutations and combinations, derivation of formulae and their connections, simple applications. **<u>Binomial Theorem:</u>** *History, statement and proof of the binomial theorem for positive integral indices. Pascal's triangle, General and middle term in binomial expansion, simple applications.
November 2019	**<u>Straight Lines: (Continued…)</u>** *Various forms of equations of a line: parallel to axis, point-slope form, slope-intercept form, two-point form, intercept form and normal form. General equation of a line. * Equation of family of lines passing through the point of intersection of two lines. Distance of a point from a line. **<u>Introduction to Three–dimensional Geometry:</u>** *Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points and section formula. **<u>Probability:</u>** *Random experiments; outcomes, sample spaces (set representation). Events; occurrence of events,'not', 'and' and 'or' events, exhaustive events, mutually exclusive events, Axiomatic (set theoretic) probability, connections with the theories of earlier classes. Probability of an event, probability of 'not', 'and' and 'or' events.
December 2019	**<u>Probability(Continue….)</u>** Axiomatic (set theoretic) probability, connections with the theories of earlier classes. Probability of an event, probability of 'not', 'and' and 'or' events.

	Conic Sections: *Sections of a cone: circles, ellipse, parabola, hyperbola, a point, a straight line and a pair of intersectinglines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.
January 2020	*<u>**Limits**</u> Derivative introduced as rate of change both as that of distance function and geometrically.Intuitive idea of limit. Limits of polynomials and rational functions Trigonometric, exponential and logarithmic functions. *<u>**Derivatives**</u> Definition of derivative relate it to scope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and Trigonometric functions. *<u>**Mathematical Reasoning:**</u> Mathematically acceptable statements. Connecting words/ phrases – consolidating theunderstanding of "if and only if (necessary and sufficient) condition", "implies", "and/or"," implied by", "and", "or", "there exists" and their use through variety of examples related to real life and Mathematics. Validating the statements involving the connecting words- differencebetween contradiction, converse and contrapositive.
February 2020	. **FINAL ASSESSMENT 2020**
March 2020	